Catalogue of American Amphibians and Reptiles.

WEBB, ROBERT G. 1970. *Gerrhonotus kingii.*

Gerrhonotus kingii (Gray)
Sonoran alligator lizard

Elgaria Kingii Gray, 1838:390. Type-locality, "Mexico" (Boulenger, 1885:275), restricted to "Mojárachic, Chihuahua" by Smith and Taylor (1950:327), and subsequently to "Huachuca Mountains, Arizona" by Schmidt (1953:139). Holotype, adult, British Museum (Natural History) V25a/1946.8.29, presented by Thomas Bell (holotype not seen by author). See Comment.

Gerrhonotus kingii: Müller, 1865:604. First use of combination.

Gerrhonotus knightii: Herrick, Terry and Herrick, 1899:143. *Lapsus* for *kingii*.

• CONTENT. Three subspecies are recognized: *kingii, nobilis,* and *ferrugineus.* See Comment.

• DEFINITION. A moderate-sized (maximum snout-vent length about 125 mm) species of *Gerrhonotus* allied to the *multicarinatus* group (Fitch, 1938; Stebbins, 1954), having 8 to 15 dark brown narrow or broad bands on the body. The dorsal bands contrast with the pale yellowish-olive to olive-brown ground color. The eye is orange to pink. The granular area of the lateral fold is grayish. There are distinct roundish black and white marks on the upper lip. The limbs are short, the hind limb averaging about 28 per cent of the snout-vent length. The tail is from 2 to 2½ times the length of the body, with 121–150 whorls on complete tails. The scales on the limbs, neck, and most of the body are smooth; the six or eight mid-dorsal scale rows have weak keels. Transverse dorsal scale rows usually number more than 50 (mean, about 55; range, 48 to 60). The longitudinal dorsal scale rows usually number 14, but are often 16 (rarely 18).

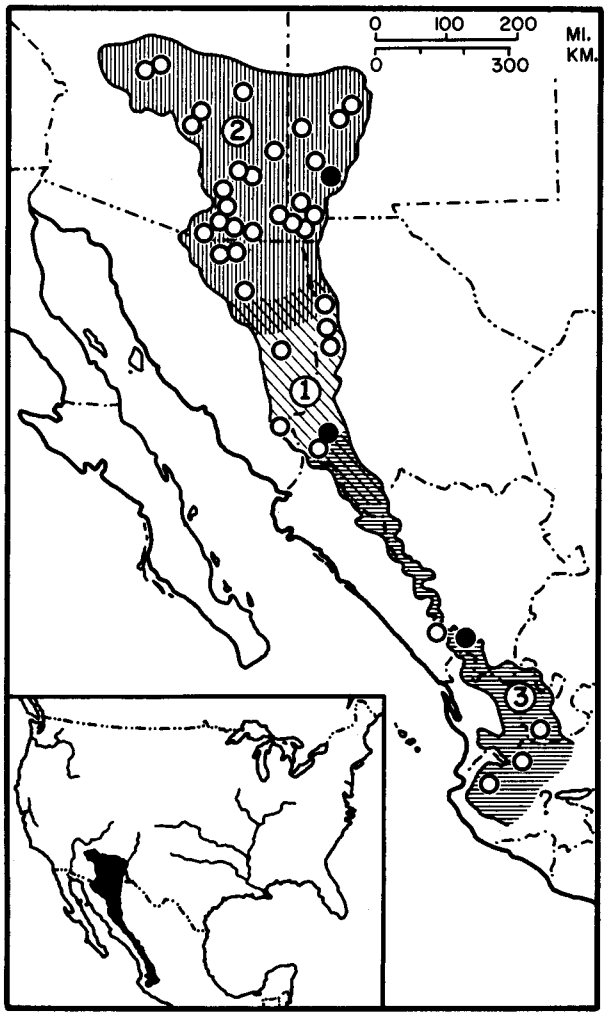
These characteristics, in combination, distinguish *G. kingii* from all other species of *Gerrhonotus.* There is no marked secondary sexual variation.

• DESCRIPTIONS. Young and adult *G. k. ferrugineus* were described by Webb (1962). Because *G. k. kingii* and *G. k. nobilis* are distinguished only by minor features of scutellation, descriptive comments on either young or adults are generally applicable to both subspecies. The best general descriptions are in Van Denburgh (1922), Smith (1946), and Stebbins (1954, 1966). Aside from comments that accompany type descriptions (Gray, 1838; Duméril and Bibron, 1839; Baird and Girard, 1852), briefer descriptions are in O'Shaughnessy (1873 [comments concern holotype]), Bocourt (1878), Van Denburgh (1896), Van Denburgh and Slevin (1913), Ditmars (1936), Gloyd (1937), Fitch (1938), Taylor and Knobloch (1940), Bogert and Oliver (1945), Woodin (1953), Medica (1965), and Hardy and McDiarmid (1969). Concise and detailed descriptions of juveniles are unavailable.

• ILLUSTRATIONS. Photographs of adult and juvenile *G. k. ferrugineus* were provided by Webb (1962). *G. k. kingii* was illustrated in Bocourt (1878, Pl. 21C, figs. 2 [top of head] and 2a [side of head]). All other published illustrations are of *G. k. nobilis.* Photographs of adults were presented by Ditmars (1936), Gloyd (1937), Smith (1946, one of three the same as in Gloyd), and Stebbins (1958). Stebbins (1966) provided a colored illustration of an adult. Adults were illustrated by Baird (1859, Pl. 25, figs. 1–8, scutellation), Cope (1900:519, fig. 92, scutellation), and Stebbins (1954). Gloyd (1937) provided a photograph of the habitat in Arizona. Webb (1962) presented a photograph of the type-locality of *G. k. ferrugineus* in Durango, Mexico.

• DISTRIBUTION. *Gerrhonotus kingii* ranges from central Arizona (north as far as 9 miles south of Sedona, Yavapai County) and southwestern New Mexico (north as far as Rosedale, Socorro County), southward into western Mexico. The species has been previously recorded from the Mexican states of Chihuahua (Bogert and Oliver, 1945; Tihen, 1948), Sinaloa (Hardy and McDiarmid, 1969), Durango (Webb, 1962), and Jalisco (Zweifel, 1954; Webb, 1962).

The following unpublished locality records are shown on the map (abbreviations used are: AMNH, American Museum of Natural History; BYU, Brigham Young University; KU, University of Kansas Museum of Natural History; UA, University of Arizona; UI, University of Illinois Museum of Natural History; UMMZ, University of Michigan Museum of Zoology; UTEP, University of Texas at El Paso): ARIZONA—*Graham Co.*: Klondyke (UI). *Navajo Co.*: Show Low (UA). *Pima Co.*: vicinity Oracle (UA). *Santa Cruz Co.*: 1 mi. N Nogales (KU). *Yavapai Co.*: Prescott (UA). CHIHUAHUA—3 mi. N Chuhuichupa, 4 mi. N Chuhuichupa (BYU). JALISCO—3 km. NE Talpa (KU). NEW MEXICO—*Catron Co.*: 5 mi. E White Creek (UTEP). *Hidalgo Co.*: near center Little Hatchet Range (AMNH). SONORA—Arispe, Cananea, and 10 mi. E Santa Ana on road to Yecora



MAP. Hollow symbols represent known localities, some of which share the same symbol. Solid symbols mark type-localities. Areas of intergradation are questionable (see Comment). Question mark signifies uncertain southern distributional limit. The range is discontinuous in Arizona and New Mexico.

(UA); Bavispe River below Three Rivers near Chihuahua-Sonora line (BYU); 9 mi. NNE Imuris (KU). ZACATECAS —3 mi. NW Tuel de Ortega (UMMZ).

The species occurs generally in mountainous areas of the central Arizona highlands and adjacent New Mexico, in the mountain ranges of southeastern Arizona and southwestern New Mexico (distribution discontinuous), and in the Sierra Madre Occidental of Mexico. In the northern part of the range (Arizona) extremes in habitat are pine forest (maximum elevation, 8826 feet; Medica, 1965) and broadleaf riparian woodland in desert and grassland (minimum elevation, 2400 feet; Lowe, 1964). Habitat in the southernmost part of the range, at least in Durango and Sinaloa, Mexico, is tropical montane vegetation (described by Webb and Baker, 1962; Hardy and McDiarmid, 1969).

• Fossil Record. None.

• Pertinent Literature. The two most comprehensive papers treating variation and relationships with other species are Fitch (1938) and Stebbins (1958). A scattered literature offers brief statements on morphology and natural history, or locality records for the species in Arizona (Van Denburgh, 1896; Stejneger, 1902; Stone, 1911; Van Denburgh and Slevin, 1913; Gloyd, 1937; Little, 1940; Woodin, 1953; Gehlbach, 1956; Medica, 1965), or New Mexico (Herrick, Terry and Herrick, 1899; Bailey, 1913; Van Denburgh, 1924; Gehlbach, 1956). Oviparity and numbers of eggs were mentioned by Cunningham (1958) and Stebbins (1958), cochlear anatomy by Schmidt (1964), and peritoneal pigmentation by Hunsaker and Johnson (1959). Gehlbach (1956) noted that the skin is shed in one piece. Criley's study (1968) on the osteology of gerrhonotiform lizards included one specimen of *G. kingii*.

• Etymology. The intent of the patronymic *kingii* is uncertain. Mr. E. N. Arnold of the British Museum (*in litt.*) suggests either Rear-Admiral Philip Parker King, who collected many reptiles (mainly Australian) for the British Museum, or his son, Captain Philip Gedley King, who sailed with Charles Darwin on the *Beagle*. *Nobilis* (Latin) means well-known or excellent and presumably refers to the pattern; *ferrugineus* (Latin) means rusty or rust-colored, in allusion to the rusty or orangish color of the posterior part of the body and tail of hatchlings and young.

1. *Gerrhonotus kingii kingii* (Gray) Sonoran alligator lizard

Elgaria Kingii Gray, 1838:390. See species account.

Gerrhonotus multifasciatus Duméril and Bibron, 1839:401. Type-locality, "Mexique," restricted to "Mojárachic, Chihuahua" by Smith and Taylor (1950:427). Syntypes (two) in Muséum National d'Histoire Naturelle, Paris (not examined by author) received from Thomas Bell, were mentioned and illustrated by Bocourt (1878, Pl. 21C, figs. 2–2a.).

Elgaria kingii kingii: Tihen, 1948:299. First use of trinomial.

G. [errhonotus] k. [ingi] kingi Webb, 1962:73. First use of combination.

• Definition. The dark, usually red-brown, dorsal crossbands on the body are broad and continuous, about five scales wide, and wider than the pale interspaces. Each band has black, white-speckled posterior borders that extend laterally on the sides of the body. The tail is banded as the body with black speckling underneath. The top of the head has dark speckling or some dark marks. The belly usually has small dark marks, at least ventrolaterally. Hatchlings and young have continuous crossbands the length of the body and generally resemble adults in pattern, except that the bands are often darker than in adults. The posterior part of the body and tail of hatchlings and young are not markedly orangish as in *G. k. ferrugineus*. The moderately long tail, when complete, is about twice the length of the body and has about 125 (121–131) whorls of scales. Transverse rows of dorsal scales usually number 55 or less, averaging about 52. The uppermost primary temporal usually touches the uppermost secondary temporal.

• Remarks. Boulenger (1885) and Van Denburgh (1924) mentioned a young specimen from the unlikely locality of Deming, New Mexico, credited to Alfonse Forrer, whose collecting activities were confined to western Mexico. The Deming specimen is extant, and referable to *G. kingii* (E. N. Arnold, *in litt.*). This specimen, which is not plotted on the distribution map, may have come from more suitable habitat nearby in western New Mexico, but perhaps bears incorrect locality data and is actually from Mexico.

The vernacular name "Sonoran alligator lizard," applied to the species prior to the recognition of subspecies, is appropriate for the population occuring in Sonora and Chihuahua.

2. *Gerrhonotus kingii nobilis* (Baird and Girard) Arizona alligator lizard

Elgaria nobilis Baird and Girard, 1852:129. Type-locality, "Fort Webster, Copper mines of the Gila, (Santa Rita del Cobre,) New Mexico." Two syntypes (not seen by author), U. S. National Museum 3076, collected by John H. Clark in 1851 (Cochran, 1961:109). Baird (1859, Pl. 25, figs. 1–8) provided drawings of "3076." See Remarks.

Gerrhonotus nobilis: Baird, 1859:11. First use of combination.

Elgaria kingii nobilis: Tihen, 1948:300. First use of trinomial.

G. [errhonotus] k. [ingi] nobilis: Webb, 1962:73. First use of combination.

• Definition. *Gerrhonotus k. nobilis* resembles *G. k. kingii* in pattern and most features of scutellation, except that the transverse rows of dorsal scales usually number 56 or more (average about 57) and the uppermost primary temporal usually is separated from the uppermost secondary temporal (Tihen, 1948). See Comment.

• Remarks. The syntypes of *G. k. nobilis* were collected during the Mexican Boundary Survey in 1851. At that time the Boundary Commission, with John Russell Bartlett as Commissioner and Col. James Duncan Graham and John H. Clark attached to his staff, was headquartered near the Santa Rita copper mines (= Santa Rita, Grant County, New Mexico). An advance party of the Commission arrived January 23, but the main contigent arrived in April, and occupied a deserted Mexican fort called Cantonment Dawson. This post, located about 15 miles south of the Santa Rita copper mines (Pearce, 1965:59), was occupied by the army after the Commission moved on in October, and then was renamed Fort Webster. Later (September 9, 1852) this site was abandoned, and a new fort was constructed on the Río Mimbres about 14 miles northeast of the copper mines, but the old name (Fort Webster) was retained (see Frazer, 1965: 106–107). Thus, the syntypes collected in 1851 were most probably found between April and October, 15 miles south of Santa Rita, Grant County, New Mexico. Specimens of reptiles in the U. S. National Museum collected in this period are credited to either Graham or Clark. Some specimens obtained on a trip into what is now mostly Arizona, bear the locality "Sonora" (see Stejneger, 1940). The locality of the syntypes of *G. k. nobilis* (USNM 3076) has also been recorded as "Sonora" (Cope, 1900:520; Yarrow, 1882:47).

One specimen of *G. k. nobilis* (USNM 8763; see Tihen, 1948), collected by Dr. C. G. Newberry in November, 1873 (Yarrow, 1875, 1882; Cope, 1900), is reported from "Ralston, Arizona," a locality of hitherto unknown geographic position. Van Denburgh (1922) suggested "Ralston [New Mexico?]." Ralston was a post office in 1870 and 1871, but the name was subsequently changed to Shakespeare. This town, now abandoned, lies at the north tip of the Pyramid Mountains, about two miles south of Lordsburg, Hidalgo County, New Mexico (Pearce, 1965).

3. *Gerrhonotus kingii ferrugineus* Webb
Rusty alligator lizard

Gerrhonotus kingi ferrugineus Webb, 1962:73. Type-locality, "two miles north of Pueblo Nuevo, *ca.* 6000 feet, Durango, Mexico:" Holotype, Michigan State Univ. 4093, an adult female, obtained on July 22, 1960, by Robert G. Webb.

• DEFINITION. The dark dorsal crossbands on the body are narrow, usually not exceeding one scale-length in width, and are often interrupted to form a series of small spots (anteriormost bands continuous in hatchlings). There may be few or no dark marks on top of the head and on the tail, and the ventral surface of the body mostly lacks dark marks. The tail and posterior part of the body of hatchlings and young (to a size of at least 34 mm snout-vent length) are orange-brown to red-orange. The long complete, unregenerated tail is about two and one-half times the body length; the tail of the holotype has approximately 150 whorls of scales.

• REMARKS. This subspecies, known only from the Mexican states of Durango, Sinaloa, Jalisco and Zacatecas, occurs in subtropical, mountainous habitats at a general elevation of about 6000 feet, both on the western slopes of the Sierra Madre Occidental, and in the large barrancas and canyons that dissect the Sierra Madre. *Gerrhonotus k. ferrugineus* doubtless occurs also in Nayarit.

Gerrhonotus k. ferrugineus is the most distinctive of the three subspecies, differing both in color pattern and in habitat from *G. k. kingii* and *G. k. nobilis*. *Gerrhonotus k. ferrugineus* is similar to *Gerrhonotus paucicarinatus* (Fitch, 1938; Webb, 1962) from the Cape Region of Baja California.

The vernacular name, rusty alligator lizard, is proposed in allusion to the rusty or orangish color of the posterior part of the body and tail of young lizards.

COMMENTS

Elgaria kingii Gray was based on a manuscript name and description by Thomas Bell (Gray, 1838). No collection data are given in the original description. Boulenger (1885:275) noted that the "Type" was an "Ad[ult]" in "bad state" from "Mexico."

Elgaria marginata Hallowell was listed as a synonym of *Gerrhonotus kingii* by Tihen (1948) and Schmidt (1953). The original description of *E. marginata* by Hallowell (1852) is brief, but later (1854) he elaborated the description and provided an illustration (Plate III). The description is based on a young specimen from "New Mexico, west of the Rio Grande." The pattern ("a few minute points along the middle line of the back") and prominent keeling (each scale on back and sides "having a distinct carina in the middle" and the scales of the tail "carinated above and upon the sides") are not features of *Gerrhonotus kingii*. Despite the stated type-locality, *E. marginata* seems to conform best to the young of either *G. multicarinatus* or *G. coeruleus*. Cope (1900:521) considered *Elgaria marginata* a synonym of *G. multicarinatus*.

Fitch (1938) hinted at geographic variation in the number of longitudinal dorsal scale rows, with Arizona-New Mexico populations having 14 and Mexican specimens perhaps having 16. The two subspecies, *G. k. kingii* and *G. k. nobilis*, with intergradation in Chihuahua (Pacheco and Colonia García; Tihen, 1948), are weakly differentiated. Integradation between *G. k. ferrugineus* and *G. k. kingii* has not been demonstrated, although Webb (1962) noted possible evidence of intergradation in Chihuahua (Cerocahui and Mojárachic). Future investigators should check on the possible specific status of *G. k. ferrugineus*.

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